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# Bulletin

## THE NEW YORK STATE SOCIETY OF CERTIFIED PUBLIC ACCOUNTANTS

## A GENERAL DISCUSSION *relating to the* AUDITING *of* MACHINE KEPT RECORDS

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# Bulletin

THE NEW YORK STATE SOCIETY OF
CERTIFIED PUBLIC ACCOUNTANTS

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THE ARTICLES IN THIS ISSUE OF THE BULLETIN, WHICH ARE CONFINED TO THE SUBJECT OF ACCOUNTING MACHINERY AND MATTERS RELATED THERETO, HAVE BEEN PREPARED UNDER THE AUSPICES OF THE SOCIETY'S COMMITTEE ON ACCOUNTING MACHINERY.

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# Foreword

*By* CHARLES J. MAXCY, C.P.A.

THE use of machinery in the computation and the assembling of business transactions presents a fascinating field to the certified public accountant. A fair working knowledge of the various types of machines places the accountant in the position to advise his client how he may most efficiently and economically record his transactions.

By a fair working knowledge I do not mean to imply that the accountant must be an expert on any one type of machine. On the contrary, his knowledge must only be of a sufficient scope to enable him to decide upon the type of machine to be employed and to assist intelligently the manufacturer in working out the necessary forms and set-up of accounts for the particular application.

Volumes might be written describing the various machines and their uses, without touching upon the particular problem of any given reader. For this reason, every accountant should devote the necessary time to keep himself informed of the new developments and applications of the various types of machines.

A familiarity with accounting machinery further assists the accountant in his auditing work. Basically the auditing of machine kept records and pen and ink kept records is the same. However, the introduction of symbols and the difference in the method of displaying the transactions present to the accountant, who has not familiarized himself with machines and their application, certain difficulties.

With this thought in mind, the Committee on Accounting Machinery of The New York State Society of Certified Public Accountants has devoted the past year's work to the unusual features presented in the auditing of machine kept records. The accompanying papers by members of the committee, in the main, deal with this phase of the accountant's work.

# Errors—Their Prevention and Detection

*By* S. CARLTON KINGSTON, C.P.A.,
*of* STERN, PORTER, KINGSTON & COLEMAN,
*and* LEWI GLUICK, C.P.A.

THE hour of five has struck, but instead of the old time bookkeeper reaching for his coat and hat, he digs in to commence another day's work before going home. An error has been made and the quarry must be found. Modern accounting machinery has done much to eliminate clerical errors, so that such errors are not as formidable today as they were in the days gone by. However, the bookkeeper's nightmare still persists. Again, despite the progress of machinery, the "boss" cannot always go home with a free mind. Why? Because another type of error may have been committed—a fraud.

The word "error" is defined as a mistake, fault, transgression. From an accountant's viewpoint, this definition would embrace all clerical and bookkeeping incorrections, mistakes in opinion and judgment, neglect of duty or propriety, violations of law or business ethics, either on his own part or on the part of the client and client's staff. An error may be either one of omission, which arises from a failure to record an entry, or one of commission, which is an actual mistake in the record.

While errors in judgment or opinion are of the utmost importance to the public accountant, they are not considered herein. Only adequate knowledge of, and training in, the fundamentals and technique of accounting, and the inculcation of a high sense of morals and ethics in the individual, can tend to reduce such errors. The line of demarcation between correct and faulty judgment in accounting cannot be finely drawn, as there are too many controversial questions upon which accounting minds differ. This type of error, therefore, can better be left for some other time.

The most important types of errors encountered by an accountant, aside from unintentional, honest and purely cler-

ical ones, are the intentional errors wilfully made to obscure an illegal transaction, to misrepresent the facts, or to cover a defalcation or shortcoming, on the part of an employee, officer, partner, etc.

There are innumerable ways in which errors occur. Regardless of their source, they are traceable to incompetency, carelessness or dishonesty on the part of some individual. The bookkeeper or clerk may be poorly and incompletely trained, or not adapted to the work, while at other times, loose office procedure and laxity of management cause or encourage errors. Not until perfection has been attained will errors be eliminated. Perfection is too high a standard to set for any human, but every means at the accountant's disposal should be utilized to reduce to a minimum the number of errors and the time needed to correct them.

Accounting machinery has done much not only toward reducing errors, but also toward decreasing the time devoted to detecting and rectifying them. Mechanical devices have made such headway that it is not amazing that laymen have come to believe that they are foolproof. Machines are nearly indispensable tools, but the intentional type of error caused by a dishonest employee or principal for the purpose of concealing irregularities cannot be disclosed through the use of mechanical devices alone. The detection of this type of error still depends upon the maintenance of adequate control accounts, internal checks, and independent audit. Every well planned system should provide places for these necessary cross checks. Although each has its own function to perform, they nevertheless are all somewhat interdependent, and unless they are properly coordinated, errors cannot be disclosed or eliminated in the best, easiest and quickest possible manner. The purpose of this paper is not only to point out some of the ways whereby accounting machinery helps to prevent and to detect mistakes promptly, but also to stress some other types of errors that no machine, unaided, can prevent or detect. Hence, the need for the accountant's services in making installations and audits still exists and will exist always.

Mechanical accounting is the recording of accounting entries through use of machines. Such methods are valuable

aids in saving time and labor, and in decreasing the cost of bookkeeping. No little part of this reduction in cost is attributable to the prevention and prompt detection of clerical errors. In fact, it may be safely said that the chief advantages of mechanical bookkeeping devices are the elimination of unintentional errors and the saving in time needed to detect and rectify them. Sometimes an error arises through defects in machinery, but this is comparatively rare, and can be nearly entirely prevented by proper care of the machines. Frequent cleaning, caution in handling equipment, regular but not excessive oilings, and constant inspection and repair, result in financial savings. Human errors, however, are vastly more common and are more difficult to prevent. In our observation, many bookkeepers, in the ordinary offices, are incapable, due to inadaptation, lack of knowledge and training, and improper attitude toward the work. Even when intelligent and competent help is employed, errors exist.

Clerical errors are made in a hundred and one different ways, but they are all variations of mistakes in computation, transposition or transcription, and postings to wrong accounts. This accounts in a great measure for the success of mechanical bookkeeping. Take the question of errors in addition commonly made by bookkeepers in the books of primary entry, or in the individual accounts in subsidiary ledgers. When the books are kept by pen method, the error usually is not determined until the subsidiary ledger trial balance is drawn off and compared with the control account in the general ledger. Of course, errors in adding of subsidiary ledger accounts may have been previously disclosed by adding the open items in the account and comparing the total with the final balance of that account, but in any event, the error is found only by checking each account at some point in the month. This takes time. All the bookkeeping machines that are in the market provide automatic mechanical adding counters, so that additions, barring defects in the mechanism, are taken for granted and thus much time, expense and mental annoyance are saved.

Errors in transposition or transcription, made by pen method, in many cases do not come to light until the end of

the month. This means not merely the checking of one day's work, but wading through the entire month's postings. The difficulty of finding errors increases in geometrical proportion with the time elapsed. Where great volume is involved, finding of errors promptly is imperative. The bookkeeping machine limits the checking to one day's work, as all machines provide proof sheets for accumulating totals of individual posting for comparison with a predetermined total of sales, purchases, or whatever is being posted, thereby immediately marking a mistake. This saving in time in turn results in greater posting capacity of clerk or machine.

Another fertile source of error in pen method is posting to the wrong side of the ledger. Such an error is almost impossible in machine kept records.

The greatest source of error in machine kept records is the carrying forward of "old" balances. This disadvantage has been largely eliminated through the use of the "proof column" and "locking" devices.

So much for the unintentional error. Illustrations have been given to show that accounting machines are valuable adjuncts in the prompt prevention, detection and localizing of clerical errors, and that they make for increased speed, volume and accuracy.

Let us now examine the intentional error. This class includes errors of omission and commission intended to cover frauds. This type of error is difficult to discover. Again, the mechanical accounting devices may be of material assistance, but one contemplating devising an accounting installation, mechanical or otherwise, must bear in mind that the prime aids in detecting the intentional error are proper controlling accounts, internal checks and independent audits regularly made. The system should be made an aid to auditing instead of hindrance as is so frequently done. Facility of audit makes easy the finding of errors.

For the sake of meeting of the minds, let us understand what control accounts and internal check mean. Control accounts are accounts in the general ledger which summarize detailed accounts, of like nature, kept in subsidiary ledgers, the purpose of which is the balancing and verifying of ac-

counts in groups and the balancing of the general ledger without the necessity of balancing all accounts together. Internal check is a system under which the accounting work of an office is so routed that the accounts and procedure are not under the complete control of any one person, and that the work of one employee is contiguous to that of another.

A frequent oversight in making machine installations is the failure to provide properly kept controlling accounts. This may be due to the incompetency of the one devising the system, but is often due to over-confidence in the equipment and a false sense of security that the machines cannot go wrong. It is not the machines that go wrong, but the system and individual. Take, for example, a system where the sales register is prepared simultaneously with the posting to the subsidiary ledger. The posting to the general ledger control should only be made from or after the sales book total has been checked with the total of the sales tickets, independently added by a second clerk. Nevertheless, it has been observed in many offices this procedure is not always followed. In fact, cases have been seen where the posting to the general ledger sales account has been made from the total postings in the subsidiary ledger as shown on the "control" card kept for machine tally purposes. A control account run in this manner is of little value as intentional or unintentional failure to enter sales would not be detected.

Even worse is the case of a bad machine installation in an insurance agency, which did not provide for any proof with a control account. In this instance, the machine prepared invoices to customers were made in manifold, the duplicate copy serving as the assureds' ledger and the triplicate as the company's ledger. When the premium was paid, the duplicate bill was stamped "paid" and withdrawn from the outstanding ledger. The office procedure did not call for taking off a trial balance of the open items for comparison with the control account, so that it was easy for the dishonest bookkeeper to pocket receipts, upon marking the duplicate paid and filing it away. Such a condition seems incredible, but it is an actual case. The management stated that the one who installed the system did not direct that a trial balance

had to be drawn off to agree with the control account in the general ledger.

What is stolen by the dishonest employee is cash—not book entries. Book entries are made to hide the wrongdoing. Bookkeeping devices may complicate the making of the fraudulent entry, but often the handwritten record facilitates proving the embezzlement. On the whole, internal checks and regular certified audits are the surest safeguards for preventing and detecting defalcations.

Consider the simple process of "lapping." This consists of delaying entry of cash receipts from day to day, covering the previous day's shortage by entry of the following day's receipts, and so on. Any cashier who is unrestricted in handling cash receipts can do this without collusion. The safeguard is internal check and independent audit consisting of (1) day book entry of checks by a second party receiving the mail direct, and subsequent comparison of the day book with the cash book; (2) deposit of all checks by someone other than cashier; (3) preparation of duplicate deposit slips, the duplicate to be signed by the bank teller and returned to the auditor for independent detailed comparison with the cash book. Similar checks and auditing procedure safeguard against another favorite means of embezzling, viz.: the substitution of customer's check for reported cash sales or receipts, and the covering of the resultant customer's debit balance by charging it to allowances or bad debts or transferring it against an old credit balance, not taken, owing another customer. In this case, as an additional check, all return sales credits should be supported by receiving department voucher, all allowance and bad debt write-offs should be inspected for approval by someone in authority, and all transfers from one customer's account to another should be carefully examined.

Other types of dishonest errors frequently found, not requiring detailed explanation, the detection of which depends upon a system of independent audit, are:

Understating cash sales.

Overstating sales discounts—pocketing from cash collections difference between actual and recorded discounts.

Forging checks.

Raising cancelled checks.

Presentation of false vouchers or the same voucher twice in support of fictitious purchase or expense.

Padding payrolls and withholding deposit of unclaimed wages and refunds.

Collections withheld by collectors.

The above examples do not begin to exhaust the list. Dozens of other types probably come to the reader's mind, including irregular practices of management itself in over or understating accounts for financial statement purposes. Sufficient cases have been given, however, to show the necessity for well thought out plans for check and double check when making a machine or other installation, and for the constant audit of even machine kept records. It is here that the certified public accountant can serve his client well—in the dual capacity of auditor and systematizer. The ability to lay out a successful installation presupposes a knowledge of a business and how it is conducted and to what use data compiled is to be put. The certified public accountant possesses this knowledge of his client's affairs without which the routing of the work through the office may become illogical and the internal checks inadequate.

In the actual auditing of records, be they pen or machine kept, knowledge of accounting machines is of material assistance to the certified public accountant. He not only has available many mechanical aids, ranging from multicolored pencils to tabulating machines, but also his audit procedure may be simplified by the equipment used in his client's office. Some machines are better equipped than others to handle certain types of work. The best machine, therefore, is the one best adapted to do the work in hand. At times, while the equipment employed is adaptable, the work is improperly routed; accordingly, the auditor must know his machinery and how to get the most out of it in order to intelligently prepare his audit program to fit individual and peculiar circumstances.

# Function of Professional Accountants in Planning and Installing Machine Methods

*By* J. ANDREW CRAFTS, C.P.A.
*of* CRAFTS & VOLK

MACHINE METHODS, as used in this title, imply the complete arrangements for handling the various materials involved in the office operations on the same production basis as is commonly applied to the factory, with the best mechanical equipment, efficient personnel, specialized operations which are standardized, and complete coordination of all operating divisions. The mechanical equipment is an important element but can only be considered as one factor in the entire production scheme.

The large business organizations of today with their volume of transactions of a similar nature require production methods in the office for efficient and economical operation. Any organization with more than one clerk occupied with detail work may readily find that proper equipment and planning will permit more efficient handling of this detail by one clerk with proper mechanical equipment and coordination than was formerly possible with two or more clerks. If a machine costing, for example, one thousand dollars and having a five-year life will save one clerk at a salary of $1,200.00 per year, the economy is manifest, even without consideration of increased efficiency, prompt reports, improved collections, etc. This seems elemental and yet is beyond the comprehension of many office executives, who think in terms of immediate cost.

There are any number of mechanical devices available for facilitating the work of office production, such as typewriters, adding and calculating machines, addressographs, mailing machines and finally, so-called accounting machines. While it is with the latter that this discussion is primarily concerned, all office equipment should be considered as facilitating production, the accounting machine being only one particular

type of office equipment to which this term has been generally applied.

The first accounting machine consisted of a clerk using pen and ink. This clerk wrote his journal and posted his ledger from day to day, footed both journal and ledger at least once each month and proved the total of the ledger trial balance against the journal totals at that time. If the two records did not prove the entire work of the month was rechecked, errors corrected, statements sent to customers and financial statements prepared for executives. This procedure in general was conducive of an easy going time during the month and a grand rush at the end of the month to complete the work. Frequently there were delays in getting out customers' statements and providing the figures for the management.

The increase in the volume of detail forced the subdivision of this work with a separate proof for each subdivision. Adding machines were designed to facilitate accuracy and finally the writing and adding operations were combined, so that, as the figures were written or posted, totals were accumulated. This combination of operations is the basis of all of the so-called accounting machines. The classification of items may be handled by posting, by mere accumulation of separate totals for each class of item or, in the case of the punch card machines, by mechanical sorting of cards and subsequent automatic listing and accumulation.

The accounting machine revolutionizes our conception of accounting procedure in that it immediately makes possible, without prohibitive work, a daily proof of the accuracy of the figures handled through the daily comparison of journal and ledger totals and immediate correction of such errors as may occur. This procedure usually makes it possible to eliminate the rush periods and to handle the accounting routine on the basis of a daily cycle. The creation of this daily cycle and the handling of similar transactions on a standardized volume basis makes it immediately possible to time-study the various operations, to set standards of efficiency and even in some cases to introduce production incentive bases of compensation to employees. The use of carbon paper, multicopy

forms and various methods of correlating different forms, frequently permits the combination of several hand operations into one machine operation.

All of this standardization and functional division of routines involves the definite fixing of organization lines, authorities and responsibilities, the establishment of proper factors of internal control and audit, the routing of all incoming materials in the form of correspondence, orders, remittances and the like through the various steps of the office routine, the creation of proper files and storage facilities, the provision for the inception and handling of purchase commitments, checking and payment of invoices payable, payrolls, control of the office supply store room, etc. The operations of each division must be so coordinated that the results of the operations of one division will be ready for handling by the next division in time to avoid any interruption in the even flow of material through the production sequence.

The foregoing explanation of the scope of the work involved in the planning and installation of these production methods seems necessary as a preliminary to any discussion as to the qualifications of the individual who is to handle the installation or the creation of the coordinated unit.

There are three classes of people involved in the sale and installation of office machine equipment—the manufacturer, the professional accountant, and the executives of the business requiring its benefits.

The manufacturer is faced with the necessity of selling his product. In view of the existing conditions and the general lack of comprehension of its possibilities, it has become necessary for the manufacturer to create a large sales force to canvas for possible applications of machine methods, to plan the application and to sell the business man on its efficiency and economy and, also, on the adaptability of his particular machine as compared with that of the competing machines. When the machine has been sold the manufacturer is frequently called upon to assist in the installation and to see that the system operates efficiently.

As a basis for selling his product the manufacturer advertises rather extensively and, as a basis for obtaining sales, to

a certain extent holds out his sales organization as experts in the planning and installation of machine systems. This is a perfectly natural and necessary result of existing conditions. Those familiar with the facts know that some of the older and more experienced machine salesmen know their machine and its application very thoroughly and are very versatile in working out the details of its application. However, they also know that these same salesmen are not equipped by experience to revamp and coordinate the surrounding organization so as to properly construct the underlying structure. Furthermore, their commissions do not compensate them for the time required for such service. The amount of sales effort required and the very necessary limitations on the sales price of the machines set a compensation return which will not attract a general run of salesmen who have the ability and experience to adequately handle the complete scope of the installation work as outlined herein before.

Many machine installations do not function properly through no fault of the machines but because of faulty planning and coordination. Practically all of the accounting machines that have been on the market for any time are good machines and can be made to function efficiently, if adaptable to the particular job in question and if the general system scheme is properly worked out.

The next class of individuals involved is composed of professional accountants or auditors who, as a general rule, have a more or less fixed clientele for whom they act as auditors and general advisors on financial and organization matters. While the training of an auditor may be primarily along auditing lines, consisting of the verification and criticism of the creations of others, he should endeavor to make his verification and examination of the facts and methods involved in any engagement the basis of constructive criticism and suggestion. His experience among numerous organizations and his observation of the office methods of successful business units, together with his knowledge of the principles of auditing and control, are the best possible foundation for creative system work and should be used to their full advantage along this line.

Any of the profession who still retain a prejudice against the loose leaf records, so necessary to machine accounting and so abhorrent to the old time auditor, should bear in mind the fact that such records need be loose leaf only during the period of active use. Temporary bindings or filing facilities can be arranged to keep these records in perfect order during this period, after which permanent bindings of various kinds are available at small cost so that they can be securely bound in proven form and put away for reference, audit, etc. The larger corporations of the country have been handling huge volumes of accounts receivable and payable in this manner, while many apply the same principles to the once sacred general ledger.

The professional accountant of today should not neglect to spend the time necessary to equip himself properly with a knowledge of machine operation and system installation. While the audit of a given business may represent a profitable recurring engagement each year and while suggestions for changes and improvements in organization and office methods may sometimes result in the assumption of certain responsibilities on the part of the instigator and may even antagonize certain members of the client's organization, the professional accountant should nevertheless feel it his duty to prepare himself to give such constructive suggestions and to render this service available to his client at all times.

The third class of individuals involved is composed of business executives. As a rule the executive has a definite feeling of loyalty to his own organization and methods, and a reluctance to make changes. He also has the impression that his own line of business is very different from others and that his own organization knows more about that business than any outside systems expert. He does not seem to realize that the same general principles of office procedure and machine application can be applied to the handling of any particular series of transactions and that anyone with a broad experience in this field can become familiar with the particular facts involved in a comparatively short time, so as to plan an intelligent handling of same.

The business executive frequently lacks a comprehension of the value of intelligent system work and the possibilities for improvement involved. He is therefore reluctant to provide adequate compensation, particularly when he finds that the representative of a well known manufacturer is ready and willing to assist in planning the application without charge, other than the cost of the machine.

The possibilities for development along the lines of office machine application are very great. At the present time there are efficient installations in probably not more than 10% of the jobs that should be covered. The ultimate solution must come about through the gradual education of the business executive to the possibilities of economy and efficiency involved and to the fact that real economy of operation in his office can be best effected by retaining a high type of specialized service in the creation of his office structure, using the best machine equipment available.

The difficulties encountered in many installations now operating are due to the fact that the entire planning and installation has been handled by employees with little or no previous experience in machine operation, cooperating with machine salesmen with little or no experience in office organization and accounting and perhaps even with comparatively limited experience in the operation of their own machines. Natural development will enable the machine manufacturer to be more frank in acknowledging the limitations of his sales organization from the standpoint of system installation work. The resultant demand for a specialized service will naturally induce a larger number of professional accountants to specialize along these lines.

The initiative must come from the machine manufacturer and the professional accountant. It is manifestly to the advantage of each to work together towards the education of the business executive and the perfection of machine application to office production. The accountant should feel a definite obligation to familiarize himself with various machine methods and systems routines and should make a real effort to give his clients the benefit of his experience in that connection. Such a procedure on the part of the accountant would do more

to develop the market for the manufacturer's product than any other combination of factors, as well as provide a more definite universal assurance of successful machine operation. Furthermore, it would immediately increase the value of the service rendered to the client and remove the suggestion of competition which exists between the machine manufacturer and the accountant.

The machine manufacturer should impress upon his sales organization the limitations of its proper function and experience and the fact that regardless of how thoroughly they may know the routine for handling one or more machine operations, it is not a part of their work to coordinate or rebuild the whole organization of the customer, as is often necessary to obtain efficient operation, and that it is to the best interests of all concerned to encourage the employment of a certified public accountant. There is too much at stake to risk the handling by amateurs. When a man is sick he calls a doctor, preferably a specialist. So, when an office is sick, a certified public accountant should be called as a doctor.

This office doctor is in the position of an unbiased outsider. He can choose the machine equipment best adapted to the various jobs and can arrange the authorities and organization lines in an impersonal way which would not be possible for a member of the organization or for anyone having only a sale as his underlying interest. Even so, in order to get results, he must sell his ideas every step of the way, frequently over strenuous objections from certain members of the organization. Furthermore, he must sell them in such a way as to obtain the confidence and cooperation of all divisions toward making the operations efficient. To obtain proper results he must have had a broad accounting experience, must know machine operation thoroughly, be a super salesman, a diplomat and yet have the driving power to get results.

# Auditing Punched Card Records

*By* WILLIAM R. DONALDSON, C.P.A.,
*of* MILLER, DONALDSON AND COMPANY

WHEN the auditor has put down his bag and placed his hat on the rack and the comptroller starts him on the customary preliminary tour of the accounting department, what sense of trepidation begins to rise in his bosom as he sees in one corner of the office, nicely partitioned off, a battery of tabulating machines. And then when the comptroller proudly says: "You know we do most of our accounting with punched cards. We are right up to date." Queer misgivings gather in the auditor's heart as he visions piles of little cards all filled with tiny numbers, thousands and thousands of them stacked up like thin slices of Swiss cheese peppered with holes, and with them rolls upon rolls of figure-covered paper —"music rolls" that play a song of something or other, but the customary words are missing from the right-hand edge. The auditor to whom punched card accounting is a mystery, approaching such a task for the first time, certainly shakes in his shoes and rues the day the Census Office disgorged into industry this product of an ingenious statistician.

But here it is, this machine bookkeeper, which when properly applied and installed does Gargantuan work for its employer and master, and does it well, accurately and cheaply. We say "properly applied and installed" because if this is not the case the most skilled auditor is bound to meet a horrible nightmare of figure chasing. Auditing its work, when rightly conceived, should not cause any sinking of heart or building up of new rules. All the old rules of auditing still go; it is simply a problem of applying them to a new set of facts and set up of records, putting a little more emphasis here and a little less there. If improperly applied and faultily operated all the skill in the world, plus the strongest of language, will not cause the results of its whirring wheels to be transcribed to working papers without considerable heartbreaking effort.

Summed up, the rules of auditing merely require that the accounts as stated in their respective classifications and in their respective amounts be traced back to original sources

to verify that they have been properly classified and valued. There is no need in this paper to enter into any further discussion of these rules, of the usual methods or of the debatable practices. And further, it is not its scope to outline the mechanical and electrical processes and workings of the machines nor how punched card tabulating equipment may be adapted to the bookkeeping tasks of the accounting department. We shall simply discuss some of the tasks we find done by the machines and how "in our opinion" (those three familiar words) one should audit this work.

At the outset it must be recognized that applications which accomplish the same task may vary greatly in details of design and in flow of information. Some are laid out so that through cross references and tabulations the work of the auditor in tracing entries to original sources is facilitated; others are so condensed in their tabulations and sketchy in cross references that the work of the audit is rendered most difficult. In such latter cases (and there are many of them) the management should be urged to amend the system so that it will lend itself readily to proper audit. It is fundamental that any good system of machine bookkeeping should possess this characteristic. By this is meant that the original book, record or source of entry should be clearly identified and referred to in the summaries which may be gathered for control purposes. Should voucher register and journal cards all be thrown together, sorted and totaled by accounts to be charged without detail tabulating run or the totals only of the "sort" accumulated by accounts, it is quite impossible to trace with reasonable expedition the nature, reason and support of the entries. In the early days of tabulating equipment it was used almost exclusively for purely statistical analysis so that group totals sufficed in most cases. In the bookkeeping work of the office tabulating equipment is applied principally to prepare and record entries which would otherwise be prepared by clerks and recorded by them in some sort of book or card record. Looked at in this light the accounting department should understand that listings by printer-tabulator in full descriptive detail are the substitute for the handwritten books or cards and should be taken off, preserved carefully, even bound

in loose leaf binders and kept in the vault in the same manner as the superseded hand-written records would have been treated. Listings thus converted into subsidiary books of account may go before the auditor for his scrutiny and verification. Control postings may be checked or built up, supporting papers and original source material examined from the reference numbers and explanatory data appearing on the sheets and such other work as may be necessary accomplished just as if it were a hand written record. Where the alphabetical tabulator is used explanation in words rather than code help somewhat, but if a code-book is kept handy the auditor will not find the burden excessive of referring to it and will soon familiarize himself with the important code numbers and symbols.

In order to determine the degree of reliance which can be placed on the punched card results, the auditor should first acquaint himself with the design and functioning of the system and the flow of accounting data through the tabulating room. The internal checks in the system and whether punchings are verified and to what extent have a bearing on the degree of care that must be exercised and the dependency that can be placed upon the mechanical phases of the work. Because of the high speed and of the many mechanical and electrical actuations involved in this type of equipment it must be realized that the chance of machine failure is greater than in simple equipment. Satisfying oneself that the tabulating room is in itself an efficient operating unit is of paramount importance and keys the work the auditor must do in verifying its production. Thus is eliminated concern as to whether the source data has been accurately translated into holes and into tabulating runs. With this determined, the mechanical phases of the work can be accepted with the same assurance that one accepts the totals of an adding machine run. If the adding machine is faulty in its totalizing it becomes merely a listing machine and the tape runs must be added mentally. If the listing is faulty, not only must additions be made but the listing itself must be checked to original data. So with the tabulating room. If its efficiency and accuracy is discredited this same process of audit must

be followed, the extent depending of course on each individual case, even to the length of building up new analyses on working papers direct from original sources. Such a condition, it is felt, does not warrant further consideration in this article because the question does not then become one of auditing punched card records but rather of auditing, analyzing and summarizing the data entirely independent of the cards.

Thinking in terms of the original sources as the records to be audited, sometimes the punched cards themselves constitute the original sources. For example, job time cards of workers in the factory and requisitions for the withdrawal of raw materials and supplies (so-called "dual cards"). Then again cards may be punched for the same sort of information from time tickets and requisitions which are separate from the tabulating cards. Tracing entries to the tabulating cards themselves gives the audit in the first instance, whereas in the second instance the audit must carry back of the cards to the source material from which they have been punched. Inventories are sometimes taken directly on tabulating cards each separately priced, extended and punched; sometimes inventories are priced and extended by the digit method and extensions not punched in the cards. In some instances the system goes a step further and "gang-punches" extensions into cards sorted by identical prices and quantities. The latest piece of equipment automatically multiplies and punches extensions without human intervention. Here too inventory cards may be punched from original tickets and listings entirely independent of the tabulating cards. Working with tabulating runs, which represent the detail back of control postings, the procedure becomes simply that of checking the original data against the runs. If this data is independent of the punched cards reference to the punched cards may be omitted as examination of them is not necessary. If the punched cards are so-called "dual cards" then they must be referred to, not in their character as punched cards but because they are the source material. If it is not the practice of the client to make and preserve tabulating runs but to prepare entries from summaries not listed in detail the auditor will find the best method to be to have the cards kept on file

sorted into the classifications which are to be audited and especially run through the tabulator-printer for detail listing. This detail listing may then be verified by reference to source data.

Where cash receipts and disbursements are recorded by tabulating machines, where billings to customers are posted mechanically, where perpetual inventory increases through purchases and decreases by requisitions are kept through the use of this type of equipment, where fixed asset additions are carded and constitute the plant ledger, where creditors' accounts are kept in detail either in voucher number sequence or by creditor code number, the audit procedure is basically the same. Consider the listings as if they were hand written or typewritten subsidiary books or records; search for the customary original records back of them and verify these records against the listings and thence to the proper controls. Jump over the cards wherever it is possible to do so. Look at the cards merely as the means of translating information on to paper in classification and in amount, taking the place of the pen and the five fingers of the bookkeeper who would still be on the job if this machine age of ours had not presented us with an office robot to supplant this purely clerical part of his daily work.

Bear in mind that this machine bookkeeper is not infallible. Since it is actuated by human hands and merely echoes human judgment just as much likelihood of error exists both in execution and in judgment. Therefore, the work done by it must pass as well under audit scrutiny to insure that its results have been accurately reflected in the statements being certified.

# Auditing Records Kept by Cashier Type Machines

*By* JACOB BENNETT, C.P.A.

A CASHIER may be defined as an individual charged with the duty of making a proper and complete record of the receipt and payment of cash and also with the responsibility of the accuracy of the daily or periodical balance of cash.

A "cashier's" machine is one that is designed to make a record of cash receipts and payments in assisting the cashier to perform his duties as defined above.

Cashier machines range from the simple type of cash register on which the merchant rings up his individual sales to arrive at a total of such sales to elaborate and comprehensive machines with many keys, counters and controls the details of which are beyond the scope of this paper.

In addition to the cash register type of cashier machines are now to be found ledger posting types of similar machines.

Before the auditor is qualified to consider the audit of cashier machines he must be informed not only of the various types, but must be thoroughly acquainted with the different "controls" established in the machine under audit or "controls" that can be provided in machines to be designed and built.

The primary function of the cash register type is to accumulate totals, in more or less detail, and from these totals the general bookkeeping records and accounts are created. As these totals are built up, the register develops other records having the basic purpose of a good system of internal check—that of continual self-audit.

To illustrate:

There is the type of cash register used in restaurants or lunch counters of drug stores. This machine is designed to print receipts only, payments being made by the customers to a person other than the one printing the receipts. The customer will see that the amount as printed on the receipt is correct and the merchant will feel, that to that particular point he is protected. The machine also prints a detail strip

on a narrow strip of paper on which slip appears a record of each receipt issued by the machine. The receipts as issued by the machine are numbered and may be made to show the name or designation of the waiter or clerk issuing the receipt, as well as the nature of the sale—restaurant, cigars, etc., and "paid-outs" for disbursements made in cash. The register will accumulate totals of the various income activities of the business, as well as the paid-outs, but these totals are beyond the control of the cashier and can be disclosed by the owner at will. The totals may be carried forward indefinitely or the machine cleared as often as desired. The auditor's job here is to see that the total cash received less paid-outs is reflected in the cash deposits. If any difference develops the detail strip would be used for audit purposes, since it is a record of all transactions arranged chronologically.

A similar type of machine may be found used in chain stores. Daily or weekly reports of sales, expenses and deposits are made to the main office, the basis for each day's record being the difference between the register readings shown at the beginning and the end of the business day. In this case the cashier is able to read the totals but is still unable to clear the machine or tamper with the totals or details printed. In this type of business register totals are permitted to accumulate for periods from one week to six months, or possibly longer.

The type of machine described is designed to obtain control of cash transactions by means of signals visible to customers as well as by issuing receipts, the amounts of such receipts appearing in a total in the machine beyond the control of the cashier. This machine is used for the printing of receipts only. Larger and more elaborate machines are provided to give more control over the work of the cashier by means of printing a "certified" receipt. This is accomplished by putting into the machine the sales record of the salesman and printing on the top of the sales slip the amount of the sale as it appears on the slip. The total so printed by the register on the sales is picked up by the machine and carried in a cumulative total of sales, which may be classified by type of merchandise, sales clerk, etc., or not classified at all, as the merchant prefers.

This type of register is of more interest to the auditor, since it is designed to build more than one set of facts to be reflected in general books of account. Separate totals can be shown for cash sales, charge sales, received on account, paid-outs and refunds. Each transaction recorded on the register must be classified as provided for in the machine as built. Any attempt to record a money amount without some kind of classification will lock the mechanism of the machine. Additional control is provided with this type of machine by means of additional "counters" or "adders." These controls will not only show money totals of cash sales, charge sales, received on account, paid-outs and refunds, but will also record the number of transactions in each classification. Counters will also be provided to show the number of customers, all of which information may be of value if the auditor finds it necessary to audit the detail slip in the machine itself. The accumulated totals can be read or the machine cleared of the totals, as often as desired by the owner of the business or one in charge, other than the cashier. A record is provided showing the total number of times that the totals have been read or reset, and from this can be seen whether or not the cashier has been showing an undue and unnecessary interest in repeated readings of the register totals.

As stated before, since all cash register types of cashier machines accumulate totals for bookkeeping records and *do not actually create such records,* the duty of the auditor is to satisfy himself that the totals so accumulated are correct, and perform the audit of the books and records in the accustomed manner.

The accuracy of the totals appearing on these machines will depend on:

First—the care used by the cashier, or cashiers, in the recording of transactions, depending upon customers to "audit" this work by checking receipts and "certified" receipts with cash register entries as made, and

Second—possibility of collusion between a cashier and a customer which would permit a condition under which a customer will accept a receipt for a smaller amount of the sale or would permit a sale to be made with no record thereof in the register.

Where such a condition is suspected, one test to be made is to have some purchases made by members of the staff of the auditor or by other persons qualified to judge the method in which the cashier is recording the sales.

In addition to the cash register type of cashier machine there is the ledger posting type.

Based upon the principle that the cashier makes a record of cash received and paid out, these machines are built for the making of such records and at the same time postings are made to accounts receivable records, instalment accounts, savings bank accounts, building and loan accounts, etc.

The basis of control in the operation of these machines is in the condition that as the cash receipt is recorded in the machine the account card, bankbook, etc., is put into the machine and the record and the receipt of cash is made at one operation on the company's own record, the customers' records and in the accumulated totals as provided for in the various registers on counters. The control sheet is a strip of paper in the machine known as the journal sheet.

There is one feature of the operation of this ledger poster type machine which requires special attention from the auditor. In cases where the customer or payee fails to bring his record at the time of making a payment, or if a payment is received through the mail and the customer's record is not available, a special slip is put into the machine in place of such record. (At this time the amount of receipt is included in the total transactions for the day.) The slip is issued to the payee as a receipt, and upon presentation of this slip and his book by the payee at some future time, an entry is put through the machine in order to make a record on the payee's book. Since the amount involved has already been included in the totals of the day in which the transaction took place, the operator must exercise care to see that when this memorandum entry is made in the payee's books that the amount is not included in that particular day's total. In auditing this record, where differences are to be located, the auditor should have this type of transaction in mind.

The ledger posting type of machine can be made to accumulate totals for cash sales, charge sales, first payments,

received on accounts, miscellaneous credits, miscellaneous debits, paid-outs, etc. As a transaction is recorded in the amount keys, the proper classification is designated and the transaction is recorded as completed. Failure to state the classification will lock the machine and no record can be made. Further control of the machine is established by the fact that each of the totals is locked in the machine and cannot be released or the machine be reset except by the use of the appropriate keys in charge of a responsible person other than the cashier.

At the end of an agreed period of time, generally daily, a specially prepared form of summary is inserted in the machine and the totals of each group are cleared from the machine and in the same operation printed by the machine on the summary card against the proper headings—cash sales, charge sales, cashier A, cashier B, etc.

Since entries from the machine are made at different spaces on the ledger cards, bankbooks, summary cards, etc., each form is ruled with the lines numbered vertically and a special device on the machine is provided so the record on which an entry is to be made is brought beneath the printing mechanism at the proper blank line.

Keys are also provided to show which particular person makes each entry by the use of initialed keys: A., B., C., etc.

In the audit of records kept by cashier-ledger-posting type machines the auditor will commence his work with the verification of the correctness of the figures shown on each day's summary sheet. Errors in recording the nature of receipts are possible. Credits, cash, and charge sales may be confused, for instance. This error will be reflected in the difference of cash on hand at the end of a day, as well as in the trial balance of the accounts receivable. Other errors may be developed from using the wrong classification keys which will affect the cash balance on hand as found and as indicated by the daily summary taken from the machine. Since all transactions passing through the machine are recorded on the journal or audit strip of paper in the machine, this strip would be the basis for checking the necessary records in the required detail.

# Cooperation Between Certified Public Accountants and Bookkeeping Machine Manufacturers

*By* JUSTIN JACOBS, C. P. A.

## Introduction

THE element of cooperation between certified public accountants and bookkeeping machine manufacturers will, to a marked degree, affect the public served by both of these agencies. Accounting machinery functions most efficiently when its installation, operation and supervision harmonize with the entire accounting system of an organization. The certified public accountant should be the agency most capable of effecting this harmony.

No single force can prevent our services and the use of accounting machines from becoming more extensive, nor interfere with their destiny of increased scope and value as time goes on. However, discord between bookkeeping machine manufacturers and certified public accountants would surely retard their mutual progress. Although it would seem that the utmost cooperation between these two factors should be a foregone conclusion, certain subtle influences have worked, and are working, to hamper coordinated efforts along this line. These differences have been caused by a comparatively small number of advertisements and sales talks that may have been misinterpreted to imply that business machine companies were offering gratuitous accounting and tax services. Occasionally an overenthusiastic salesman may try to sell bookkeeping machinery by this insinuation instead of relying on the many real merits of his machine. This noxious practice is rare and beyond the control of the bookkeeping machine sales manager who in most instances would be inclined to severely discipline the salesman at fault if the matter came to his attention.

A condensed psychological history of the expansion of the certified public accountant's functions may throw an interesting light on our subject. The metamorphosis in the reports

of public practitioners are used as milestones in this brief survey to bear eloquent testimony of their transition from the stage of glorified adders and checkers to their progress toward a higher professional plane. It is well recognized in the science of evolution that the history of the individual, to a certain extent, repeats the history of the race. Thus the individual practitioner on his road from Junior to Certified Public Accountant, traces the course of the following historical survey.

## Historical Survey

### *The Pre-Report Stage — Adding and Checking Functions*

Originally it was the function of the certified public accountant to verify only the clerical and mathematical accuracy of his client's records. At this stage in the development of the profession the mere presence of a public practitioner in a bank was sufficient to cause rumors of suspected irregularities. In the early years of his practice, one eminent member of this Society habitually performed his bank audits secretly and at night in order that his activities should not become known to the depositors with the possible result of a run on the bank. This gentleman is fond of relating the fact that one night a cashier confronted him with a brace of guns, in true western fashion, and dared him to find the defalcation.

At this stage in the history of the profession most embezzlers were crude in their methods and committed most of the depredations by juggling figures. Able accountants scorned the use of adding machines because they honestly believed the machines were slow and unreliable. Bookkeeping machinery was practically unknown.

### *Primary Reports — Classified Figures*

The next milestone in the history of the certified public accountant was marked by reports which were rather primitive when based on the standards of today, and which were little more than classified statements of figures. Many of these reports were handwritten, but some of the more progressive firms used typewriters and a few even went so far as to use adding machines in their own offices for rechecking purposes. The significance of the bookkeeping machine at that time

may be compared to that of the automobile when it was a one cylinder horseless carriage.

*Comments on Accuracy and Verification*

The advent of income taxes did more than anything else to broaden the scope of our work. It increased the necessity for conferences with clients and policies were discussed rather than mere figures. Occasionally the client took the initiative and brought up matters other than taxes or past operations. New clients with inadequate records called upon us not only for tax work but also for advice on system installation, reviews of existing systems, etc. Credit men realized that many clients' statements, while conservative for tax purposes, were optimistic for credit purposes and that public accountants should be called in. Initiative caused us to amplify our reports to include comments on the accuracy and the verification of figures contained therein. During this period many bookkeeping machines were sold and welcomed because of resulting legibility and accuracy. Neither cooperation nor conflict existed between office equipment manufacturers and certified public accountants during this period because both were too busy in their respective fields to give much thought to cooperation.

*Ratios, Percentages and Comparisons with Prior Periods*

Next we expanded our reports to include ratios, percentages and comparisons with prior periods. These comparisons furnished us with a new source of clues that led to the suspicion and often detection of fraud and error. The information in our expanded reports, in many instances, inspired us with ideas for effecting tax and business economies. Our field was expanding so rapidly that many of us chose between concentrating on either routine or constructive work. Most of us realized that both were important. Our more progressive brethren welcomed the bookkeeping machine as a means of installing and putting into operation such systems as would afford the client adequate protection by test-check audits and make detailed exhaustive checking less necessary. These devices freed us from detail sufficiently to allow for the consideration of broader phases of our work. We were rewarded by

the appreciation of our clients and more adequate fees for our efforts.

*Ratios, Percentages and Comparisons with Other Organizations*

We then expanded our comments to dwell on comparisons of ratios and percentages of similar businesses and of trade associations. These statistics were very helpful in preparing briefs for many tax appeals. They also indicated possibilities along the lines of budgetary control. It was now firmly established that the installation of systems was an important part of our work. We shall not now comment further on the attitude of accountants other than to say that some were enthusiastic about accounting machines while others were still apathetic.

*Comments on Past and Future Policies and Probable Effects*

At present our reports comment on the effects of past policies and venture into the field of discussion of future policies. We have invaded the sacred ground of time studies on an hourly efficiency basis, not only as they affect books and records but also in regard to actual shop operations. The realization that economic philosophy is now within the scope of our profession has finally become more and more apparent.

## Present Attitudes Regarding Cooperation

Certified public accountants and bookkeeping machine companies now have two different attitudes in regard to their policies of mutual cooperation. For the sake of convenience, we will discuss the attitudes of each of these classes under the following captions: Unsympathetic; Cooperative.

*Unsympathetic Attitude*

The answers to a questionnaire recently sent out by a prominent office equipment manufacturing company to its field representatives strongly indicated that some practicing public accountants were poorly informed regarding the elementary principles of machine accounting. We strongly suspect that the uninformed practitioners were not certified public accountants, and certainly not members of this society. Bookkeeping machine salesmen can hardly demand the co-employ-

ment of professional accountants in the course of the sale of their equipment and they are obliged to demonstrate its application effectiveness predicated upon a proposed accounting routine.

It is the hope of our committee to cooperate with every member of this Society who desires information on accounting machinery to the end that all of our members may serve and protect their client's interest by cooperating with machine companies in the installation of office equipment.

*Cooperative Attitude*

Certain bookkeeping machine companies in their instructions to salesmen specifically advise them to work with the accountant on every installation possible. Many of these salesmen have replied to their sales manager that this policy has developed new buyers for their machines and that in some instances public practitioners have discovered new functions for bookkeeping machine equipment.

The acceptance of the accounting machine as a valuable tool which, when properly applied, produces effective results is one of the greatest factors in broadening the scope of the activities of the certified public accountant. His cooperating with the machine company protects his clients against the installation of inefficient machine routines that produce the illusion of efficiency in one department at the expense of unseen hardships on the rest of the organization.

**Cooperative Policies of Other Professions**

The older professions of medicine, dentistry and the law have, through their ethical societies, disciplined the companies who have attempted to invade their respective practices by working an injury on the public through the medium of misleading and unethical advertisements.

Trust departments in many banks use the slogan, *"Consult Your Attorney"*. Most manufacturers of medical apparatus and medicines advise their customers to use their product in accordance with the directions given by the patient's private physician. One well known toothpaste manufacturer has made his product famous through the slogan, *"Use . . . . Twice a Day, See Your Dentist Twice a Year"*.

We believe our profession should cooperate with the manufacturers of accounting machines by calling their attention to the fact that they are working an injury upon themselves and the public when they consciously or unconsciously antagonize the accountancy profession by the suggestion that their services and machines afford an adequate substitute for our services.

It has come to our attention that a prominent manufacturer of business machinery is using the slogan, *"Ask Your Accountant How Our Machines Can Help You"* If this tendency is expanded it will prove of primary benefit to the lay public and of immense benefit to the business machine companies and members of our profession.

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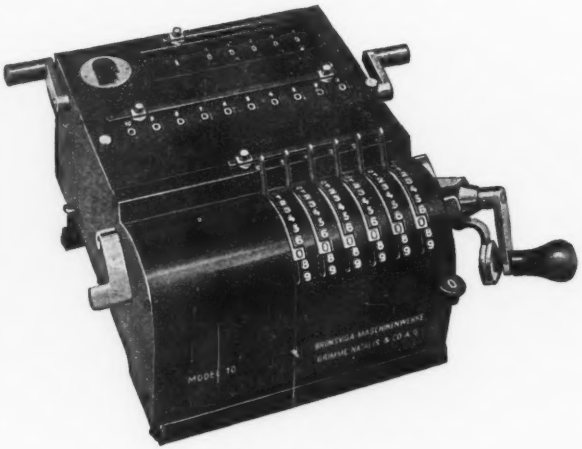

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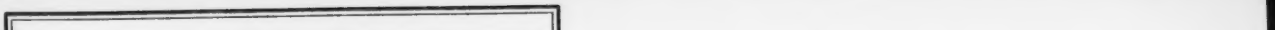
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